MQ40-A3-L1064-W

AO MODULATOR/SHIFTER 1030-1080 nm

TECHNICAL DATA SHEET 2014

Product Overview

This AO Modulator is a water cooled AOM to be used with high power linearly polarized lasers 1030, 1064 or 1080 nm. The high quality grade fused silica combined with a high top surface finishing and hard coating with low reflectivity, together with a unique and innovative low stress design, offer low insertion losses and a high damage threshold.

Features

- Large active aperture
- Linear polarization
- High diffraction efficiency
- Water cooling

Access to your operating manual

Technical Specifications

Parameter	Specification
Material-Acoustic mode-Velocity	Fused silica, V = 5960 m/s [L]
Optical Wavelength range	1030 to 1080 nm, AR coated
Optical Transmission	> 95
Input / Output Polarization	Linear Orthogonal
Active Aperture	3 x 3 mm²
Carrier Frequency / Frequency shift	+/- 40.68 MHz
Separation Angle (0-1)	7.1 mrd
Static Extinction Ratio	> 30 dB
Rise / Fall time	110 ns / mm, min 110
Diffraction Efficiency	80 % with beam diameter ≥ 1 mm, TEM00 laser beam
Analog Amplitude modulation bandwidth (-3 dB)	Max 4 MHz
Max optical power density	> 500 W/mm²
Input impedance	Nom 50 Ω
V.S.W.R.	Nom < 1.2/1
RF Power / Connector	Nom 30 Watts / BNC
Thermal Security Interlock / Connector	SMC
Size / Weight	(LxlxH) 52.2 x 62 x 37.5 mm³ / 350 g IN PRO 02
Heat exchange	Water cooling – Nom 250 ml / min @20°C
Operating Temperature	+10 to +40 Non condensing
Storage Temperature	-40 to +50 Non condensing

Options / On request

VARIABLE FREQUENCY SHIFT	☑ 40.68 +/- 2.5 MHz
ACTIVE APERTURE	☑ 2 x 2 mm²

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Rise Time (Tr) is beam diameter (Φ) sensitive:

$$Tr = 0.66\frac{\Phi}{V}$$

Amplitude modulation bandwidth (F_{-3dB}) is rise time (Tr) sensitive:

$$F_{-3dB} = \frac{0.48}{Tr}$$

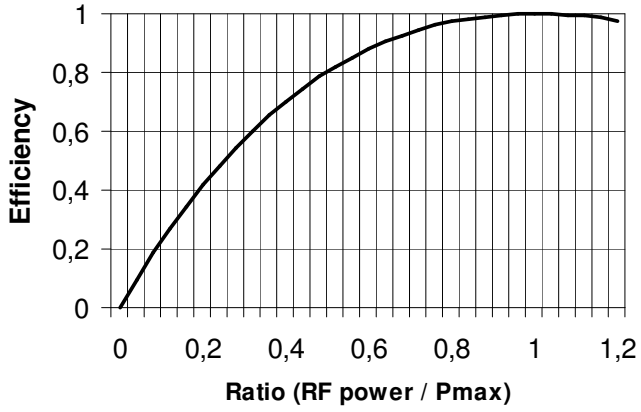
Separation angle (Δθ) is wavelength (λ) sensitive:

$$\Delta\theta = \frac{\lambda F}{V}$$

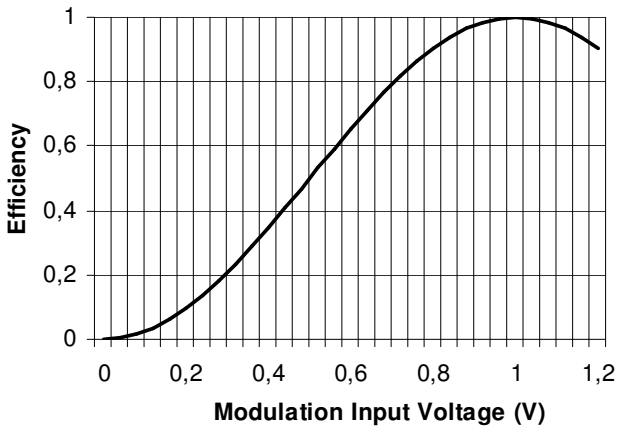
RF power (P) is wavelength (λ) sensitive:

$$\frac{P_1}{P_2} = \frac{\lambda_1^2}{\lambda_2^2}$$

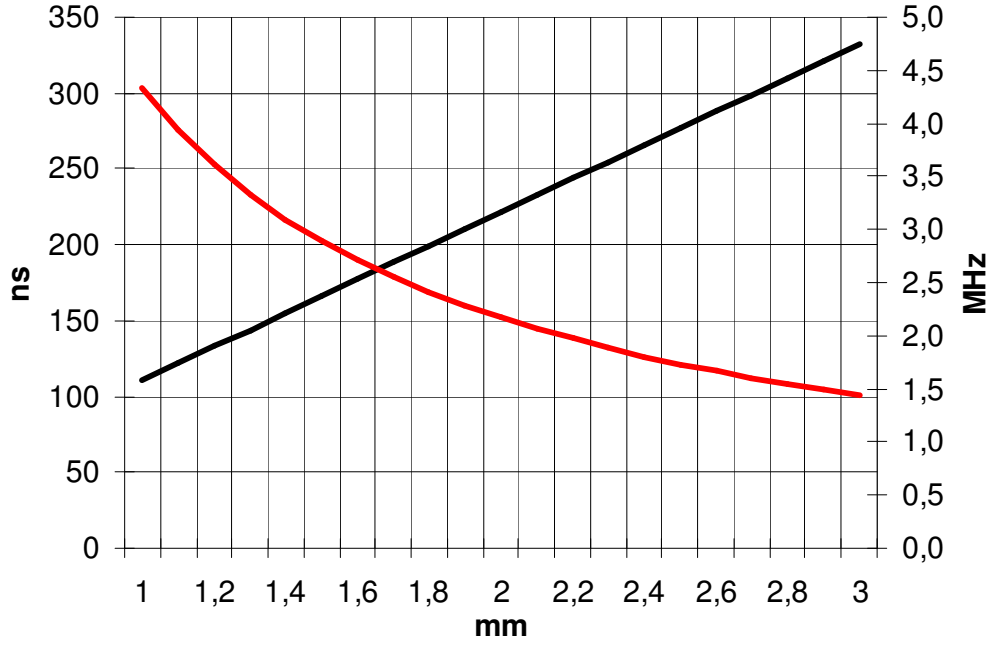
Relative Efficiency versus RF power



AO relative Efficiency vs driver MOD IN



Rise Time (black) / Analog Modulation BW (-3dB) vs Beam diameter



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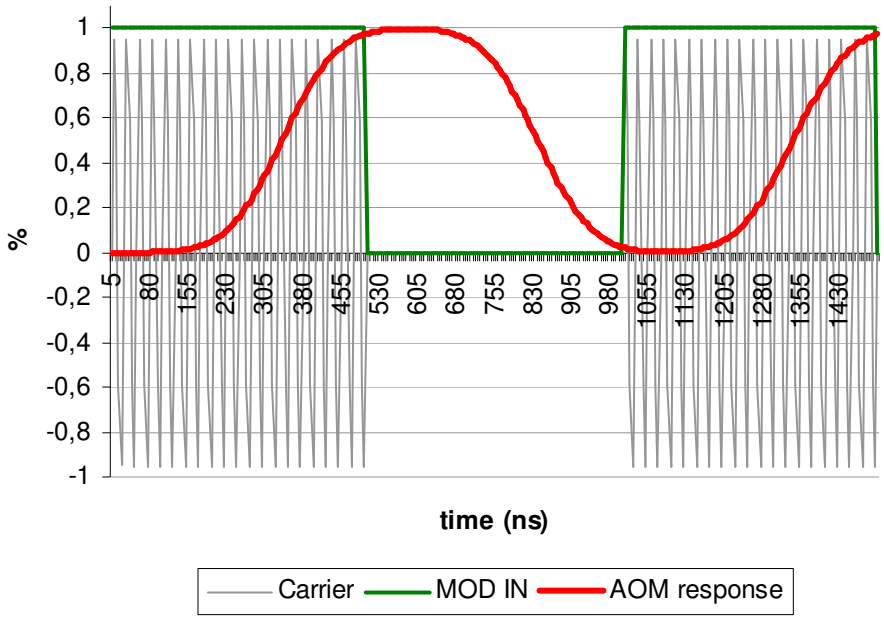
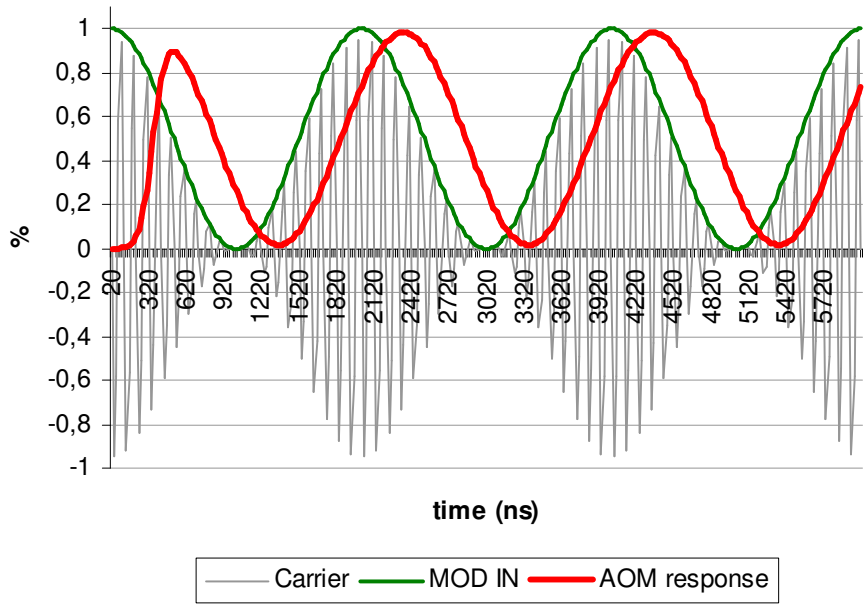
Relative Efficiency / AOM temporal response (2 mm)



Relative Efficiency / AOM temporal response (0,5MHz)



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